

Serial No. 10/849,056
Amendment
Responsive to Final Office Action dated August 15, 2008

KY-202

REMARKS

Pending Claims

Claims 4-6, and 9-12 are pending. Claims 1 and 6 have been canceled without prejudice or disclaimer. Claims 4, 5 and 9 have been amended. No new matter has been added.

Claim Rejections Under 35 U.S.C. §112

Claims 1, 4-6 and 9-12 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants have amended claims 4, 5, 9, 10 and 12 to overcome the rejection. Accordingly, the rejection should be withdrawn.

Claim Rejections Under 35 U.S.C. §103

Claims 1, 2, 4-6 and 9-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Heithoff, U.S. Patent No. 6,346,854, in view of Ishida , U.S. Patent Publication No. 2002/0075072. Applicants request reconsideration of the rejection in view of the foregoing amendments and for the following reasons.

Independent claims 4 and 9 have been amended to include two first switch circuits turned on or off by the mute signal for a predetermined interval. Each of the first and second output stage amplifiers is an operational amplifier of which an output stage is constituted by push-pull structured transistors. One of the two switch circuits (2 first switch circuits in claim 9) is provided between a gate of one of the push-pull structure transistors and a power source

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line, and another of the switch circuits is provided between a gate of another of the push-pull structured transistors and ground. The two switch circuits are provided for turning off the push-pull structured transistors of one of the first output stage amplifier and the second output stage amplifier for the predetermined interval by the mute signal to effect muting. As amended, claims 4-6 and 9-12 are patentable over Heithoff, whether or not considered in combination with Ishida. Heithoff discloses a mute circuit in which a capacitor 140 is inserted in a drive stage. The amplifier circuit 100 is turned on by deasserting the CSD control signal 143, which closes switch 142. The capacitor 140 is charged and after a predetermined time an audio signal is output to an output stage by controlling the turn-on of the op-amps 116, 124 and the comparator 130. See column 4, lines 12-37 and Figure 2 of Heithoff. Heithoff does not disclose push-pull structured transistors in the output stage amplifier 116 or 124.

Ishida discloses a relay connection switch 5 and a relay connection switch 9 at a mute circuit in a PWM switching driving audio circuit. The relay connection switch 5 is inserted between LPF3 connected to the output of the push-pull structure transistors 2a, 2b via register 4 and one end of a speaker 6. The relay connection switch 9 is inserted between LPF7 connected to the output of the push-pull structure transistors 2c, 2d via register 8 and another end of speaker 6.

The relay connection switches 5 and 9 of Ishida are turned OFF by the control signal input to the terminal 12 which is connected to the control terminals of the pre-drivers 20a, 20b, 20c and 20d. The pre-drivers generate switching signals at the "zero" level by the control signals to turn off the field-effect transistors 2-2d that comprises switching elements

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in the PWM switching driving audio circuit. As a result, the flow of excess current is blocked so that speaker 6 is protected from access current. Accordingly, the pre-drivers are not comparable to the two switch circuits claimed by applicants.

In Ishida, the mute circuit does not turn the field-effect transistors 2-2d off, but mainly turns relay connection switches 5 and 9 off. The mute circuit of Ishida has no switch circuits comparable to those claimed by applicants that are provided between a gate of one of the push-pull structure transistors and a power source line, and the gate of another of the push-pull structure transistors and ground, as claimed. See paragraph [0003] – [0031] and Figure 2 of Ishida.

The combination of Heithoff and Ishida does not render the claimed invention obvious. The mute circuit of Heithoff is not required to have a muting switch circuit in relation to the output stage amplifier 116 or 124 since the mute circuit of Heithoff has a switch 142 and switch 122. Further, the mute circuit of Ishida has relay connection switches 5 and 9 in the PWM switching driving audio circuit. Accordingly, the combination of Heithoff and Ishida does not render the claimed invention obvious to one having ordinary skill in the art and therefore the rejection under 35 U.S.C. §103(a) should be withdrawn.

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Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Date: December 15, 2008